Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name · Quick Dual Part 1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s) · One component of a two-component polyurethane system

1.3 Details of the supplier of the safety data sheet

Manufacturer · Firestone Building Products Company

200 4th Avenue S
Nashville, TN 37201-2208
United States

genflexmsds@bfdp.com

Telephone (General) · 800-428-4442

1.4 Emergency telephone number

Manufacturer · (800) 424-9300 - CHEMTREC

Manufacturer · (703) 527-3887 - CHEMTREC - International

Section 2: Hazards Identification

EU/EEC


2.1 Classification of the substance or mixture

CLP · Compressed Gas - H280
Skin Irritation 2 - H315
Skin Sensitization 1 - H317
Eye Irritation 2 - H319
Acute Toxicity Inhalation 4 - H332
Respiratory Sensitization 1 - H334
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
Carcinogenicity 2 - H351
Specific Target Organ Toxicity Repeated Exposure 1 - H372
Acute Toxicity Inhalation 2 - H330

2.2 Label Elements

CLP · DANGER

Hazard statements · H280 - Contains gas under pressure; may explode if heated
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335 - May cause respiratory irritation
H351 - Suspected of causing cancer.
H372 - Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention • P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe dust, fume, gas, mist, vapours and/or spray.
P264 - Wash thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P284 - In case of inadequate ventilation wear respiratory protection.

Response • P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342+P311 - If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P321 - Specific treatment, see supplemental first aid information.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P308+P313 - IF exposed or concerned: Get medical advice/attention.
P314 - Get medical advice/attention if you feel unwell.

Storage/Disposal • P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P410 - Protect from sunlight.
P405 - Store locked up.
P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other Hazards

CLP • According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

United States (US)
According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 • Compressed Gas
Skin Irritation 2
Skin Sensitization 1
Eye Irritation 2
Acute Toxicity Inhalation 4
Respiratory Sensitization 1
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Germ Cell Mutagenicity 2
Specific Target Organ Toxicity Repeated Exposure 1
Acute Toxicity Inhalation 2

2.2 Label elements

OSHA HCS 2012 DANGER
Hazard statements

- Contains gas under pressure; may explode if heated
- Causes skin irritation
- May cause an allergic skin reaction
- Causes serious eye irritation
- Harmful if inhaled
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- May cause respiratory irritation
- Suspected of causing genetic defects.
- Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Do not breathe dust, fume, gas, mist, vapours, or spray.
- Wash thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Contaminated work clothing should not be allowed out of the workplace.
- Wear protective gloves/protective clothing/eye protection/face protection.
- In case of inadequate ventilation wear respiratory protection.

Response

- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- If on skin: Wash with plenty of water.
- Take off contaminated clothing and wash before reuse.
- Specific treatment, see supplemental first aid information.
- If skin irritation or rash occurs: Get medical advice/attention.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.
- IF exposed or concerned: Get medical advice/attention.
- Get medical advice/attention if you feel unwell.

Storage/Disposal

- Store in a well-ventilated place. Keep container tightly closed.
- Protect from sunlight.
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

OSHA HCS 2012


Canada

According to: WHMIS 2015

2.1 Classification of the substance or mixture

WHMIS 2015

- Compressed Gas
- Skin Irritation 2
- Skin Sensitization 1
- Eye Irritation 2
- Acute Toxicity Inhalation 4
- Respiratory Sensitization 1
- Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
- Germ Cell Mutagenicity 2
- Specific Target Organ Toxicity Repeated Exposure 1
- Acute Toxicity Inhalation 2

2.2 Label elements

WHMIS 2015
DANGER

Hazard statements
- Contains gas under pressure; may explode if heated
- Causes skin irritation
- May cause an allergic skin reaction
- Causes serious eye irritation
- Harmful if inhaled
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- May cause respiratory irritation
- Suspected of causing genetic defects.
- Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

Prevention
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Do not breathe dust, fume, gas, mist, vapours and/or spray.
- Wash thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Contaminated work clothing should not be allowed out of the workplace.
- Wear protective gloves/protective clothing/eye protection/face protection.
- In case of inadequate ventilation wear respiratory protection.

Response
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
- IF ON SKIN: Wash with plenty of water.
- Take off contaminated clothing and wash it before reuse.
- Specific treatment, see supplemental first aid information.
- If skin irritation or rash occurs: Get medical advice/attention.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.
- IF exposed or concerned: Get medical advice/attention.
- Get medical advice/attention if you feel unwell.

Storage/Disposal
- Store in a well-ventilated place. Keep container tightly closed.
- Store locked up.
- Protect from sunlight.
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

WHMIS 2015
- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

3.1 Substances
- Material does not meet the criteria of a substance.

3.2 Mixtures
**Section 4 - First Aid Measures**

### 4.1 Description of first aid measures

**Inhalation**
- Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Get medical attention immediately.

**Skin**
- Wash skin with soap and water. If irritation develops and persists, get medical attention.

**Eye**
- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

**Ingestion**
- Do NOT induce vomiting. If the subject is conscious, wash mouth and give 2 or more cups of milk or water. Never give anything by mouth to an unconscious person. Obtain medical attention immediately if ingested.

### 4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

### 4.3 Indication of any immediate medical attention and special treatment needed

**Notes to Physician**
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

**Section 5 - Firefighting Measures**

### 5.1 Extinguishing media

**Suitable Extinguishing Media**
- Carbon dioxide, dry chemical, dry sand, foam, water spray.

**Unsuitable Extinguishing Media**
- Do not use water jet.

### 5.2 Special hazards arising from the substance or mixture

**Unusual Fire and Explosion**
- Containers may explode when heated.
Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions
- Ventilate the area before entry. Do not walk through spilled material. Use appropriate Personal Protective Equipment (PPE). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures
- Keep unauthorized personnel away. Keep out of low areas. Stay upwind. LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile). As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.

6.2 Environmental precautions
- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures
- Stop leak if you can do it without risk. Allow substance to evaporate. Isolate area until gas has dispersed. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container. Do not direct water at spill or source of leak. Absorb spilled material with a sorbent such as sawdust or calcium silicate hydrate. When absorbed, transfer to an impervious container. Neutralize with solution of 8-10% sodium carbonate and 2% liquid detergent in water (10:1 ratio of solution to product). Do not seal container, as CO2 will be released. Neutralize in a well-ventilated area for at least 48 hours before sealing containers for disposal.

6.4 Reference to other sections
- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling
Handling
- Use only with adequate ventilation. Use good safety and industrial hygiene practices.
When handling the product, avoid contact with eyes, skin, and clothing, using protective equipment as needed. Do not breathe dust, fume, gas, mist, vapours, or spray. Do not use this product around children, and secure it away from children. To prevent ingestion or contact following use of the product, wash hands and face before eating, drinking, applying cosmetics, or using tobacco. Remove contaminated clothing and protective equipment before entering eating/drinking areas. Containers should be kept tightly closed to prevent contact with moisture and other chemicals. Do not reuse empty containers for any purpose.

7.2 Conditions for safe storage, including any incompatibilities
Storage
- Keep containers tightly sealed during storage. Store in a dry, well-ventilated area away from sources of ignition and incompatible materials (see Section #10). Protect from heat and direct sunlight. Recommended temperature for storage is 55-85°F. (12.8-29.4°C.).

7.3 Specific end use(s)
- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Exposure Limits/Guidelines (Con’t.)</th>
<th>Result</th>
<th>Canada New Brunswick</th>
<th>Canada Northwest Territories</th>
<th>Canada Nova Scotia</th>
<th>Canada Nunavut</th>
<th>Canada Ontario</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,4’-Methylenediphenyl Diisocyanate (101-68-8)</td>
<td>TWAs</td>
<td>0.005 ppm TWA (listed under Methylene bisphenyl isocyanate)</td>
<td>0.005 ppm TWA</td>
<td>0.005 ppm TWA</td>
<td>0.005 ppm TWA</td>
<td>0.005 ppm TWA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(listed under Methylene bisphenyl isocyanate); 0.051 mg/m³ TWA (listed under Methylene bisphenyl isocyanate)</td>
<td>(listed under Methylene bisphenyl isocyanate)</td>
<td>(listed under Methylene bisphenyl isocyanate)</td>
<td>(listed under Methylene bisphenyl isocyanate)</td>
<td>(listed under Methylene bisphenyl isocyanate)</td>
</tr>
<tr>
<td>Exposure Limits/Guidelines (Con't.)</td>
<td>Result</td>
<td>Canada Quebec</td>
<td>Canada Saskatchewan</td>
<td>Canada Yukon</td>
<td>China</td>
<td>Denmark</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------</td>
<td>---------------</td>
<td>---------------------</td>
<td>-------------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>STELs</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>0.1 mg/m³ STEL</td>
<td>Not established</td>
<td></td>
</tr>
<tr>
<td>TWAs</td>
<td>0.005 ppm TWA; 0.051 mg/m³ TWA</td>
<td>Not established</td>
<td>0.05 mg/m³ TWA</td>
<td>0.005 ppm TWA; 0.05 mg/m³ TWA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceilings</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td></td>
</tr>
</tbody>
</table>

4,4’-Methylenediphenyl Disocyanate (101-68-8)

<table>
<thead>
<tr>
<th>Exposure Limits/Guidelines (Con't.)</th>
<th>Result</th>
<th>Germany DFG</th>
<th>Germany TRGS</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWAs</td>
<td>Not established</td>
<td>1000 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 8); 4200 mg/m³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 8)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Ceilings</td>
<td>8000 ppm Peak; 33600 mg/m³ Peak</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>MAKs</td>
<td>1000 ppm TWA MAK; 4200 mg/m³ TWA MAK</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td>Ceilings</td>
<td>0.05 mg/m³ Peak (can occur as vapor and aerosol at the same time, inhalable fraction)</td>
<td>Not established</td>
<td>0.020 ppm Ceiling (10 min); 0.2 mg/m³ Ceiling (10 min)</td>
<td>0.02 ppm Ceiling; 0.2 mg/m³ Ceiling</td>
<td></td>
</tr>
<tr>
<td>4,4’-Methylenediphenyl Disocyanate</td>
<td>TWAs</td>
<td>Not established</td>
<td>0.05 mg/m³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 8); 0.005 ppm TWA (listed under Methylene bisphenyl isocyanate (MDI)); 0.2 mg/m³ Ceiling (listed under Methylene bisphenyl isocyanate (MDI))</td>
<td>Not established</td>
<td>Not established</td>
</tr>
</tbody>
</table>
Diphenylmethane Diisocyanate, Isomers and Homologues (9016-87-9)

<table>
<thead>
<tr>
<th>(101-68-8)</th>
<th>MAKs</th>
<th>observed; sum of vapor and aerosol, ceiling factor 2, exposure factor 1</th>
<th>0.05 mg/m³ TWA MAK (see also polymeric MDI; can occur as vapor and aerosol at the same time, inhalable fraction)</th>
<th>Not established</th>
<th>Not established</th>
<th>Not established</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAKs</td>
<td>0.05 mg/m³ TWA MAK (see also polymeric MDI; can occur as vapor and aerosol at the same time, inhalable fraction)</td>
<td>0.05 mg/m³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed; AGW only for monomers, for oligomers and polymers see TRGS 430, inhalable fraction, as MDI, ceiling factor 2, exposure factor 1)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td></td>
</tr>
<tr>
<td>TWAs</td>
<td>Not established</td>
<td>0.05 mg/m³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed; AGW only for monomers, for oligomers and polymers see TRGS 430, inhalable fraction, as MDI, ceiling factor 2, exposure factor 1)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td></td>
</tr>
<tr>
<td>Ceilings</td>
<td>0.05 mg/m³ Peak (&quot;polymeric MDI&quot; (pMDI) is a technical grade MDI, containing 30%-80% w/w 4,4'-Methylene diphenyl isocyanate (MDI); the remainder consists of MDI oligomers and MDI homologues, inhalable fraction)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td></td>
</tr>
<tr>
<td>MAKs</td>
<td>0.05 mg/m³ TWA MAK (&quot;polymeric MDI&quot; (pMDI) is a technical grade MDI, containing 30%-80% w/w 4,4'-Methylene diphenyl isocyanate (MDI); the remainder consists of MDI oligomers and MDI homologues, inhalable fraction)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td></td>
</tr>
</tbody>
</table>

**Exposure Control Notations**

**Canada Ontario**
- **4,4'-Methylene diphenyl Diisocyanate (101-68-8):** **Designated Substances:** (0.005 ppm TWA (listed under Isocyanates, organic compounds (Methylene bisphenyl isocyanate (MDI))); 0.02 ppm Ceiling (listed under Isocyanates, organic compounds (Methylene bisphenyl isocyanate (MDI))))
- **Germany TRGS**
  - **4,4'-Methylene diphenyl Diisocyanate (101-68-8):** **Skin:** (skin notation)
  - **Diisocyanate, Isomers and Homologues (9016-87-9):** **Carcinogens:** (Category 2 (as inhalable aerosol, alveola fraction)) | **Developmental Toxins:** (Based on current data, this substance cannot be classified according to the categories in Annex I of the CLP regulation (as inhalable aerosol, alveoli fraction)) | **Reproductive Toxins:** (Based on current data, this substance cannot be classified according to the categories in Annex I of the CLP regulation (as inhalable aerosol, alveola fraction)) | **Sensitizers:** (respiratory and skin sensitizer (inhalable fraction)) | **Skin:** (skin notation)
  - **Diphenylmethane Diisocyanate, Isomers and Homologues (9016-87-9):** **Carcinogens:** (Category 4 (no significant contribution to human cancer)) | **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (inhalable fraction); see also polymeric MDI)) | **Sensitizers:** (respiratory and skin sensitizer (inhalable fraction)) | **Skin:** (skin notation)
  - **Diphenylmethane Diisocyanate, Isomers and Homologues (9016-87-9):** **Carcinogens:** (Category 4 (no significant contribution to human cancer)) | **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to (inhalable fraction)) | **Sensitizers:** (respiratory and skin sensitizer (inhalable fraction)) | **Skin:** (skin notation)
fracntion) | Skin: (skin notation)

• 1,1,1,2-Tetrafluoroethane (811-97-2): Pregnancy: (no risk to embryo/fetus if exposure limits adhered to)

**Exposure Limits Supplemental**

ACGIH

• 4,4'-Methylene diphenyl Diisocyanate (101-68-8): **TLV Basis - Critical Effects:** (respiratory sensitization (listed under Methylene bisphenyl isocyanate (MDI)))

**8.2 Exposure controls**

**Engineering Measures/Controls**

• Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal Protective Equipment**

**Respiratory**

• In case of insufficient ventilation, wear suitable respiratory equipment.

**Eye/Face**

• Wear safety glasses.

**Skin/Body**

• Wear appropriate gloves.

**Environmental Exposure Controls**

• Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

**Key to abbreviations**

ACGIH = American Conference of Governmental Industrial Hygiene

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

TWA EV = Time-Weighted Average Exposure Value

---

## Section 9 - Physical and Chemical Properties

### 9.1 Information on Basic Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Physical Form</th>
<th>Appearance/Description</th>
<th>General Properties</th>
<th>Volatility</th>
<th>Flammability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aerosol</td>
<td>Cream-colored liquid with aromatic odor.</td>
<td>Boiling Point</td>
<td>None</td>
<td>Flash Point</td>
</tr>
<tr>
<td>Color</td>
<td>Cream</td>
<td>Odor</td>
<td>Melting Point/Freezing Point</td>
<td>Vapor Pressure</td>
<td>Data lacking</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Data lacking</td>
<td>Aromatic</td>
<td>pH</td>
<td>Evaporation Rate</td>
<td>Data lacking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Specific Gravity/Relative Density</td>
<td>VOC (Vol.)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Viscosity</td>
<td>LEL</td>
<td>Data lacking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oxidizing Properties</td>
<td>Flammability (solid, gas)</td>
<td>Data lacking</td>
</tr>
</tbody>
</table>

**Vapor Pressure:** 5716 hPa

**Vapor Density:** Data lacking

**Evaporation Rate:** Data lacking

**VOC (Wt.):** None

**VOC (Vol.):** None

**Flash Point:** Data lacking

**UEL:** Data lacking

**LEL:** Data lacking

**Autoignition:** Data lacking

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Revision Date: 26/February/2018

Format: EU CLP/REACH Language: English (US)

EU CLP, OSHA HCS 2012, WHMIS 2015

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Section 10: Stability and Reactivity

10.1 Reactivity

- May react with water and incompatible materials.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization may occur at temperatures >392°F./200°C.

10.4 Conditions to avoid


10.5 Incompatible materials

- Water, alcohols, acids, alkalis, and amines.

10.6 Hazardous decomposition products

- Carbon monoxide, carbon dioxide, nitrogen oxides, isocyanates, and hydrogen cyanide.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

| Components | Acute Toxicity: Ingestion/Oral-Rat LD50 • 9200 mg/kg; Behavioral:Somnolence (general depressed activity); Behavioral:Ataxia; Nutritional and Gross Metabolism:Changes in Chemistry or Temperature:Body temperature decrease; Inhalation-Rat TCLo • 0.7 mg/m³ 6 Hour(s); Behavioral:Muscle contraction or spasticity; Sense Organs and Special Senses:Eye:Changes in extra-ocular muscles; Sense Organs and Special Senses:Eye:Other; Inhalation-Rat TCLo • 2.4 mg/m³ 6 Hour(s); Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi; Lungs, Thorax, or Respiration:Other changes; Biochemical:Metabolism (intermediary):Other proteins; Irritation: Eye-Rabbit • 100 mg • Moderate irritation; Skin-Rabbit • 500 mg 24 Hour(s); Multi-dose Toxicity: Inhalation-Guinea Pig TCL0 • 2 mg/m³ 3 Hour(s) 5 Day(s)-Intermittent; Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi; Lungs, Thorax, or Respiration:Other changes; Respiration:Changes in lung weight; Mutagen: DNA adduct • Inhalation-Rat • 0.002 mg/L 17 Hour(s) 1 Year(s); Micronucleus test • Inhalation-Rat • 7.1 mg/m³ 3 Hour(s); DNA adduct • Inhalation-Rat • 2 mg/m³ 52 Week(s)-Intermittent; Reproductive: Inhalation-Rat TCLo • 9 mg/m³ 6 Hour(s)(6-15D preg); Reproductive Effects:Maternal Effects:Other effects; Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system | 4,4’-Methylenediphenyl Disocyanate (25% TO 50%) | 101-68-8 |

<p>| Components | Acute Toxicity: Ingestion/Oral-Rat LD50 • 49 g/kg; Behavioral:Somnolence (general depressed activity); Gastrointestinal:Hypermotility, diarrhea; Nutritional and Gross Metabolism:Changes in Chemistry or Temperature:Body temperature decrease; Inhalation-Rat LC50 • 490 mg/m³ 4 Hour(s); Sense Organs and Special Senses:Eye:Other; Lungs, Thorax, or Respiration:Respiratory depression; Blood:Hemorrhage; Skin-Rabbit LD50 • &gt;9400 mg/kg; Irritation: Eye-Rabbit • 100 mg • Mild irritation; Reproductive: Inhalation-Rat TCLo • 12 mg/m³ 6 Hour(s)(6-15D preg); Reproductive Effects:Maternal Effects:Other effects; Reproductive Effects:Effects on Embryo or Fetus:Extra embryonic structures; Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system; Tumorigen / Carcinogen: Inhalation-Rat TCLo • 6 mg/m³ 6 Hour(s) 2 Year(s)-Intermittent | Diphenylmethane Disocyanate, Isomers and Homologues (&gt; 50%) | 9016-87-9 |</p>
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<td>WHMIS 2015 • Acute Toxicity - Inhalation 2 - ATEmix(inhl, dust/mist) = 0.46 mg/L 4h</td>
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<td>Serious eye damage/Irritation</td>
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<td>Carcinogenicity</td>
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<td>Toxicity for Reproduction</td>
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<td>STOT-SE</td>
<td>EU/CLP • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation</td>
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<td>WHMIS 2015 • Specific Target Organ Toxicity Repeated Exposure 1</td>
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</table>

**Potential Health Effects**

**Inhalation**

- **Acute (Immediate)**
  - Fatal if inhaled. May cause respiratory irritation.
- **Chronic (Delayed)**
  - May cause allergy or asthma symptoms or breathing difficulties if inhaled. 4,4’-Methylenediphenyl Diisocyanate may cause effects on the lungs, resulting in impaired functions.
Skin
  Acute (Immediate) • Causes skin irritation. May cause skin sensitization. Symptoms include redness, and skin rash.
  Chronic (Delayed) • No data available

Eye
  Acute (Immediate) • Causes serious eye irritation.
  Chronic (Delayed) • No data available

Ingestion
  Acute (Immediate) • The product is nontoxic by ingestion, but ingestion may cause nausea, vomiting, and/or gastrointestinal irritation.
  Chronic (Delayed) • No data available

Mutagenic Effects
  • Repeated and prolonged exposure may cause mutagenic effects.

Carcinogenic Effects
  • Repeated and prolonged exposure may cause cancer.

Key to abbreviations
LC = Lethal Concentration
LD = Lethal Dose
TC = Toxic Concentration

Section 12 - Ecological Information

12.1 Toxicity
  • Material data lacking.

12.2 Persistence and degradability
  • Material data lacking.

12.3 Bioaccumulative potential
  • Material data lacking.

12.4 Mobility in Soil
  • Material data lacking.

12.5 Results of PBT and vPvB assessment
  • No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects
  • No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods
Product waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
Packaging waste • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information
14.1 UN number | 14.2 UN proper shipping name | 14.3 Transport hazard class(es) | 14.4 Packing group | 14.5 Environmental hazards
---|---|---|---|---
DOT | UN3500 | CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen) | 2.2 | Not relevant | NDA
TDG | UN3500 | CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen) | 2.2 | Not relevant | NDA
IMO/IMDG | UN3500 | CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen) | 2.2 | Not relevant | NDA
ADN | UN3500 | CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen) | 2.2 | Not relevant | NDA
ADR/RID | UN3500 | CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen) | 2.2 | Not relevant | NDA
IATA/ICAO | UN3500 | CHEMICAL UNDER PRESSURE, N.O.S. (contains fluorinated hydrocarbon, nitrogen) | 2.2 | Not relevant | NDA

14.6 Special precautions for user
- None specified.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
- Data lacking.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications
- Pressure(Sudden Release of), Acute, Chronic

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<td>Yes</td>
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Preparation Date: 08/January/2018
Revision Date: 26/February/2018
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<th>Diisocyanate, Isomers and Homologues</th>
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**Belgium**

**Labor**

Belgium - Substances and Preparations - Carcinogens and Mutagens

- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4'-Methylenediphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**Bulgaria**

**Environment**

Bulgaria - Air Quality - Maximum Admissible Hazardous Contaminant Levels - 24 Hour

- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4'-Methylenediphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

Bulgaria - Air Quality - Maximum Admissible Hazardous Contaminant Levels - 30 Minute

- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4'-Methylenediphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

Bulgaria - Air Quality - Maximum Admissible Hazardous Contaminant Levels - Annual

- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4'-Methylenediphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**Canada**

**Labor**

Canada - WHMIS 1988 - Classifications of Substances

- 1,1,1,2-Tetrafluoroethane 811-97-2 A
- 4,4'-Methylenediphenyl Diisocyanate 101-68-8 D1A, D2A, D2B
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 D1A, D2A, D2B

Canada - WHMIS 1988 - Ingredient Disclosure List

- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4'-Methylenediphenyl Diisocyanate 101-68-8 0.1 %
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**Environment**

Canada - CEPA - Priority Substances List

- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4'-Methylenediphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**Denmark**

**Environment**

Denmark - List of Undesirable Substances - Product Groups/Function

- 1,1,1,2-Tetrafluoroethane 811-97-2 Spray canisters (listed under Fluorinated greenhouse gases); Refrigeration systems (listed under Fluorinated
<table>
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<th>Classification</th>
<th>Concentration Limits</th>
<th>Labelling</th>
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### Europe

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### Summary

- **Insulating foam (listed under Fluorinated greenhouse gases)**
- **Binders; Curing agents; Adhesives; Paints; Coatings; Molding compounds**

---

**Europe**

**Other**

- **EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification (OBSOLETE)**
  - 1,1,1,2-Tetrafluoroethane
  - 4,4’-Methylenediphenyl Diisocyanate
  - Diphenylmethane Diisocyanate, Isomers and Homologues

- **EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits (OBSOLETE)**
  - 1,1,1,2-Tetrafluoroethane
  - 4,4’-Methylenediphenyl Diisocyanate
  - Diphenylmethane Diisocyanate, Isomers and Homologues

- **EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling (OBSOLETE)**
  - 1,1,1,2-Tetrafluoroethane
  - 4,4’-Methylenediphenyl Diisocyanate
  - Diphenylmethane Diisocyanate, Isomers and Homologues

- **EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations (OBSOLETE)**
  - 1,1,1,2-Tetrafluoroethane
  - 4,4’-Methylenediphenyl Diisocyanate
  - Diphenylmethane Diisocyanate, Isomers and Homologues

- **EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases (OBSOLETE)**
  - 1,1,1,2-Tetrafluoroethane
  - 4,4’-Methylenediphenyl Diisocyanate
  - Diphenylmethane Diisocyanate, Isomers and Homologues

---

**Germany**

**Labor**

- **Germany - Immission Control - Qualifying Quantities for Major Accident Prevention**
  - 1,1,1,2-Tetrafluoroethane
  - 4,4’-Methylenediphenyl Diisocyanate
  - Diphenylmethane Diisocyanate, Isomers and Homologues

- **Germany - Immission Control - Qualifying Quantities for Safety Reporting**
  - 1,1,1,2-Tetrafluoroethane
  - 4,4’-Methylenediphenyl Diisocyanate
  - Diphenylmethane Diisocyanate, Isomers and Homologues

- **Germany - TRGS 505 - Specific Lead Regulations**
  - 1,1,1,2-Tetrafluoroethane
  - 4,4’-Methylenediphenyl Diisocyanate
  - Diphenylmethane Diisocyanate, Isomers and Homologues
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</table>
# United States

## Labor

### U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

- 1,1,1,2-Tetrafluoroethane
  - CAS Number: 811-97-2
  - Not Listed

- 4,4’-Methylenediphenyl Diisocyanate
  - CAS Number: 101-68-8
  - Not Listed

- Diphenylmethane Diisocyanate, Isomers and Homologues
  - CAS Number: 9016-87-9
  - Not Listed

### U.S. - OSHA - Specifically Regulated Chemicals

- 1,1,1,2-Tetrafluoroethane
  - CAS Number: 811-97-2
  - Not Listed

- 4,4’-Methylenediphenyl Diisocyanate
  - CAS Number: 101-68-8
  - Not Listed

- Diphenylmethane Diisocyanate, Isomers and Homologues
  - CAS Number: 9016-87-9
  - Not Listed

## Environment

### U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

- 1,1,1,2-Tetrafluoroethane
  - CAS Number: 811-97-2
  - Not Listed

- 4,4’-Methylenediphenyl Diisocyanate
  - CAS Number: 101-68-8
  - Not Listed

- Diphenylmethane Diisocyanate, Isomers and Homologues
  - CAS Number: 9016-87-9
  - Not Listed

### U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

- 1,1,1,2-Tetrafluoroethane
  - CAS Number: 811-97-2
  - Not Listed

- 4,4’-Methylenediphenyl Diisocyanate
  - CAS Number: 101-68-8
  - Not Listed

- Diphenylmethane Diisocyanate, Isomers and Homologues
  - CAS Number: 9016-87-9
  - Not Listed

### U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

- 1,1,1,2-Tetrafluoroethane
  - CAS Number: 811-97-2
  - Not Listed

- 4,4’-Methylenediphenyl Diisocyanate
  - CAS Number: 101-68-8
  - Not Listed

- Diphenylmethane Diisocyanate, Isomers and Homologues
  - CAS Number: 9016-87-9
  - Not Listed

### U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

- 1,1,1,2-Tetrafluoroethane
  - CAS Number: 811-97-2
  - Not Listed

- 4,4’-Methylenediphenyl Diisocyanate
  - CAS Number: 101-68-8
  - Not Listed

- Diphenylmethane Diisocyanate, Isomers and Homologues
  - CAS Number: 9016-87-9
  - Not Listed

### U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

- 1,1,1,2-Tetrafluoroethane
  - CAS Number: 811-97-2
  - Not Listed

- 4,4’-Methylenediphenyl Diisocyanate
  - CAS Number: 101-68-8
  - Not Listed

- Diphenylmethane Diisocyanate, Isomers and Homologues
  - CAS Number: 9016-87-9
  - Not Listed

### U.S. - CERCLA/SARA - Section 313 - Emission Reporting

- 1,1,1,2-Tetrafluoroethane
  - CAS Number: 811-97-2
  - Not Listed

- 4,4’-Methylenediphenyl Diisocyanate
  - CAS Number: 101-68-8
  - Not Listed

- Diphenylmethane Diisocyanate, Isomers and Homologues
  - CAS Number: 9016-87-9
  - Not Listed

### U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

- 1,1,1,2-Tetrafluoroethane
  - CAS Number: 811-97-2
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- 4,4’-Methylenediphenyl Diisocyanate
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</tr>
<tr>
<td>1,1,1,2-Tetrafluoroethane</td>
<td>811-97-2</td>
<td>Not Listed</td>
</tr>
<tr>
<td>4,4’-Methylene diphenyl Diisocyanate</td>
<td>101-68-8</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Diphenylmethane Diisocyanate, Isomers and Homologues</td>
<td>9016-87-9</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

### United States - California

#### Environment

**U.S. - California - Proposition 65 - Carcinogens List**
- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4’-Methylene diphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - Developmental Toxicity**
- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4’-Methylene diphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)**
- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4’-Methylene diphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)**
- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4’-Methylene diphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - Reproductive Toxicity - Female**
- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4’-Methylene diphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**U.S. - California - Proposition 65 - Reproductive Toxicity - Male**
- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4’-Methylene diphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

### United States - Pennsylvania

#### Labor

**U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**
- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4’-Methylene diphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

**U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances**
- 1,1,1,2-Tetrafluoroethane 811-97-2 Not Listed
- 4,4’-Methylene diphenyl Diisocyanate 101-68-8 Not Listed
- Diphenylmethane Diisocyanate, Isomers and Homologues 9016-87-9 Not Listed

### 15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

### Section 16 - Other Information

**Revision Date**
- 26/February/2018
• Changes to this revision: Section 2: Updates to classifications and corresponding label information for all agencies.

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Key to abbreviations

NDA = No Data Available